

## SUMMARY

### Use of ARAC'S National Response Center for Toxic Chemical Releases

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For 20 years, the Atmospheric Release Advisory Capability (ARAC) program at Lawrence Livermore National Laboratory (LLNL) has supported the Department of Energy (DOE) in response to major hazardous releases into the atmosphere. An overview of ARAC modeling system will be presented. The system can produce a consequence analysis anywhere in the world using real-time meteorological data to initialize a suite of complex 3-D numerical dispersion models which include terrain effects. Employing a high degree of automation expert assessors at LLNL can complete a simulation and fax or electronically send plots to emergency response managers in less than 15 minutes.

As a centralized DOE resource, ARAC's primary role has been with incidents involving nuclear material. However, in 1996 the ARAC system was enhanced to provide a similar degree of automation for toxic chemical releases. Key components of new capability will be discussed. They include the integration AICHE DIPPR chemical property database, the CAMEO ALOHA source modeling for tanks and evaporating pools, the SLAB denser-than-air dispersion code,' and contour plots using the AIHA Emergency Response Planning Guidelines (ERPGs) and the DOE SCAPA Temporary Emergency Exposure Limits (TEELs). A Motif-based user interface provides quick access to databases and source modeling and associated consistency checks for the calculations.

The value of a centralized modeling capability versus a stand-alone desk-top modeling system is presented in light of the short time and limited scale of most toxic releases and expertise to use the system. The ability to interpolate meteorological conditions at the accident scene is one of the most powerful tools of a centralized system. Consequently the system is useful for facilities without on-site meteorological data or for transportation accidents. In addition, complex models can more accurately simulate releases which last for several hours or longer, involve forecasted meteorological conditions, extend vertically into the atmosphere, are influenced by terrain driven or complex flows. Experience with recent events has shown that a centralized system can be beneficial for major chemical spills, fires or explosions. Several example responses will be highlighted. In addition, ARAC'S modeling capability will be demonstrated using modem access to LLNL via a Unix workstation. Use to ARAC by non-DOE agencies will be reviewed.

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